

Serial No. 10-648,922
Atty. Doc. No. 99P9028US01

REMARKS

Claims 29, 33 and 39 have been amended. Thus, claims 21-40 are presented for examination. Applicants respectfully request the Examiner to consider this continuation application and allow the pending claims.

Response to rejections under Section 102:

Claims 21-40 stand rejected under 35 U.S.C. § 102(b), the Examiner contending that these claims are anticipated by Kamo (USPN 5,820,976). The Examiner apparently reads Kamo as expressly or inherently disclosing Applicants claimed material system.

Kamo discloses a material system formed from a slurry of refractory oxide particles (50-60% SiO₂, 15-30% ZrO₂ and 5-10% Cr₂O₃) and refractory volcanic ash bubbles (80% SiO₂ and 20% Al₂O₃). Col. 3 lines 25-40. The slurry is then added to a solution of aqueous chromic acid. Col 3 lines 40-47, and then applied to the substrate before it has a chance to settle. Col 3 lines 47-52. The coated substrate is then dried. Col. 3 lines 60-63. [The above which is referred to by Kamo as "Step 2"]. An aqueous solution of chromic acid is then soaked through the coating to harden the coating and bond the coating to substrate. Col. 2 lines 40-55 [referred to by Kamo as "Step 3"]. Kamo's "Step 4" discloses an optional finish coat, and "Step 5" discloses a chromic-formic acid final densification.

Kamo discloses that the refractory volcanic ash bubbles have a particle size of 10-90 micrometers. Col. 3 col. 37, and explains that "increasing particle size above the range show will result in a coating that is too thick, not durable, and weakly bonded to the substrate." Col. 4 lines 30-32. Thus, the bubbles inherently have a wall thickness fairly in the range of about 5-40 micrometers if the particle size is the maximum 90 micrometers. (Applicants unsuccessfully

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attempted to contact the manufacturer of these bubbles as disclosed in Col. 5 lines 53-59 to obtain the actual wall thickness). In contrast, the claims recite a wall thickness of 50-500 micrometers.

Applicants claims further recite a packing density of 20-85%. Kamo teaches to chemically densify the slurry of refractory oxide particles and refractory volcanic ash bubbles via a chromium oxide densification process. [Step "3"]. In contrast, Applicants pack the ceramic shapes to the claimed density of 20-85%. There is no teaching or suggestion in Kamo to replace or supplement its densification process of the slurry with the ceramic shape packing as claimed by Applicants.

Reconsideration and withdrawal of the Section 102 rejection is respectfully requested.

Response to rejections under Section 103:

Claims 21-40 stand rejected under 35 U.S.C. § 103(a), the Examiner contending that these claims are obvious by Kamo in view of routine skill in the art. The Examiner apparently reads Kamo as disclosing the "general conditions" of Applicants claimed material system but not disclosing the packing density and the wall structure density, and believes that the packing density and wall structure density are merely an optimum or workable range involving only routine skill in the art.

Applicants respectfully disagree that Kamo teaches the "general conditions" of Applicants claimed invention. Kamo discloses a high temperature coating made from slurry of refractory oxide particles and refractory volcanic ash bubbles that is subsequently subjected to a chromium oxide chemical densification process, as explained in connection with the Section 102 rejection above. In contrast, Applicants claimed invention recites ceramic shapes with a

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specified wall thickness and packing density. The packing density provides dimensional stability to the overall material system. That is, by packing the thick-walled ceramic shapes (as well as interspersing the binder and/or filler about the ceramic shapes), the ability of Applicants' material system to unacceptably expand, contract or otherwise change dimension is constrained. Kamo does not disclose or suggest that its chemically densified slurry provides dimensional stability, and such chemical densification process, if anything, teaches away from dimensional stability. Thus, Applicants respectfully submit that its claimed invention is not a mere "process optimization" of the "general conditions" disclosed in Kamo and thus Kamo is insufficient to obviate Applicants claimed wall thickness and density ranges.


Reconsideration and withdrawal of the Section 103 rejection is respectfully requested.

Conclusion

The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including the fees specified in 37 C.F.R. §§ 1.16 (c), 1.17(a)(1) and 1.20(d), or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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